

Notice of Allowability

Application No.

10/520,479

Examiner

Alejandro Rivero

Applicant(s)

HAMALAINEN ET AL.

Art Unit

2618

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to application filed 1/7/2005.
2. ☒ The allowed claim(s) is/are 1-8.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Douglas Goldhush (Reg. # 33,125) on 07/06/2006.

The application has been amended as follows:

IN THE ABSTRACT:

Line 1, "The present invention concerns a method for", has been replaced with --A method for--.

Line 2, "mode (A, B, C)", has been replaced with --mode--.

Line 3, "arrays (Ant1, Ant2)", has been replaced with --arrays--.

Line 5, "providing (S10)", has been replaced with --providing--.

Line 6, "tables (LUT, LUT1, LUT2, LUT3)", has been replaced with --tables--.

Line 7, "mode (A, B, C)", has been replaced with --mode--.

Lines 8-9, "value (TC) and space correlation value (SC) for said two cross-polarized antenna", has been replaced with --value and space correlation value for the two cross-polarized antenna--.

Lines 12-14, "ratio (P1/P2) of received powers from said diversity branches, first selecting (S13) one of said performance", has been replaced with --ratio of received powers from the diversity branches, first selecting one of the performance--.

Art Unit: 2618

Line 15, "ratio (P1/P2)", has been replaced with --ratio--.

Lines 16-17, "selecting (S14) one of said individual diversity modes (A, B, C)", has been replaced with --selecting one of the individual diversity modes--.

Line 18, "303 relation (TC) and space correlation (SC) values from said", has been replaced with --correlation and space correlation values from the--.

IN THE SPECIFICATION:

Page 1, line 12, "Background of the invention", has been replaced with --Background of the Invention--.

Page 1, line 16, "filed", has been replaced with --field--.

Page 1, lines 17-18, "„Introduction to 3G mobile communications,,", has been replaced with "Introduction to 3G mobile communications"--.

Page 1, line 20, "The", has been replaced with --the--.

Page 1, line 30, "„antenna,, and „beam,,", has been replaced with --"antenna" and "beam"--.

Page 2, line 21, "ration", has been replaced with --ratio--.

Page 7, line 1, "each via each", has been replaced with --via each--.

Page 8, lines 2-6, "„A novel polarization smart antenna,, VTC, May 2001, or in „Transmission Considerations for polarization-smart antennas,, VTC, May 201. See also „Method and System For Improving Communication,,", has been replaced with --"A novel polarization smart antenna", VTC, May 2001, or in "Transmission Considerations for polarization-smart antennas", VTC, May 201. See also "Method and System For Improving Communication"--.

Art Unit: 2618

Page 8, line 17, "Summary of the invention", has been replaced with --Summary of the Invention--.

Page 11, line 1, "Brief description of the drawings", has been replaced with --Brief Description of the Drawings--.

Page 12, line 1, "Detailed description of the embodiments", has been replaced with --Detailed Description of the Embodiments--.

Page 14, line 8, "symbol „*„ denotes the conjugate complex value..", has been replaced with --symbol "*" denotes the conjugate complex value.--.

Page 14, line 30, "(0,9;0,9)", has been replaced with --(0.9;0.9)--.

Page 18, line 4, "ration", has been replaced with --ratio--.

Page 19, line 32, "later,,", has been replaced with --layer,--.

Page 23, line 13, "ration", has been replaced with --ratio--.

IN THE CLAIMS:

Claim 1, line 18, "array beams", has been replaced with --arrays--.

Claim 1, line 30, "said pair of two", has been replaced with --two--.

Claim 8, lines 4-5, "said receiver according to one of the closed-loop modes", has been replaced with --a receiver according to one of a plurality of closed-loop modes--.

Allowable Subject Matter

2. Claims 1-8 are allowed.

3. The following is an examiner's statement of reasons for allowance:

The prior art of record fails to teach selecting a diversity mode at the transmitter according to the mapping of space correlation and time correlation values of two cross-

Art Unit: 2618

polarized antenna arrays to a performance chart look-up table parameterized by an indication of a ratio of received powers from the two cross-polarized antenna arrays, after first selecting the performance chart look-up table from a plurality of performance chart look-up tables based on the ratio of received powers from the two cross-polarized antenna arrays.

Choi et al. (US 6,754,473 B1) disclose a method for providing closed-loop transmit antenna diversity in a mobile communication system having tables of estimated channel power ratio of two antennas. Rudrapatna (US 6,801,790 B2) discloses a structure for multiple antenna configurations having circuitry coupled to antenna groups to select and activate certain antennas in a group to enable antenna array to operate in either a beam forming/steering mode, a diversity mode or a MIMO mode or any combination thereof, where the antennas are activated based on characteristics transmitted/received by the antenna array. Smee et al. (US 6,990,137 B2) disclose a C/I estimation circuit having a LUT. However, Choi et al. in view of Rudrapatna and Smee et al. do not disclose selecting a diversity mode at the transmitter according to the mapping of space correlation and time correlation values of two cross-polarized antenna arrays to a performance chart look-up table parameterized by an indication of a ratio of received powers from the two cross-polarized antenna arrays, after first selecting the performance chart look-up table from a plurality of performance chart look-up tables based on the ratio of received powers from the two cross-polarized antenna arrays.

Therefore claims 1-8 are allowed.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Erceg et al. (US 2003/0050020 A1) disclose a method for emulating a MIMO transmission channel.

Shapira et al. (US 2003/016256 A1) disclose a method for improving polarization matching.

Lucidarme et al. (US 2004/0127175 A1) disclose a method of transmitting radio signals with polarization diversity.

Hoek et al. (US 2005/0042988 A1) disclose a combined open and closed loop diversity system.

5. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance." Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alejandro Rivero whose telephone number is (571) 272-2839. The examiner can normally be reached M-F, 8:30AM-5:00PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung can be reached on (571) 272-7882. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

Art Unit: 2618

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



AR



NAY MAUNG
SUPERVISORY PATENT EXAMINER